

IN THE CLAIMS:

1-12. **(Cancelled)**

13.-29. **(Cancel)**

30. (New) A pressure regulator which comprises a housing which includes an upper housing part and a lower housing part, said upper and lower housing parts defining an internal chamber therebetween, said lower housing part furthermore defining an inlet channel, an outlet channel and a valve channel therebetween, a flexible diaphragm mounted inside said housing for dividing said internal chamber into a variable volume upper chamber and a variable volume lower chamber, said flexible diaphragm biasing a movable valve element to open said valve channel when said upper chamber assumes its maximum size and said lower chamber assumes its minimum size, where the deflection capability of the flexible diaphragm is greater than a deflection necessary for acting upon the valve element, such surpassing deflection defining a compensating volume inside the housing, first biasing means for biasing said valve element so as to close said valve channel when said flexible diaphragm is deflected into the upper housing part, and second biasing means for biasing said flexible diaphragm into a position where said variable volume upper chamber assumes its maximum size, said lower housing part providing a bore which communicates said variable volume lower chamber with said outlet channel.

31. (New) A pressure regulator according to claim 30, wherein said upper housing part defines an inlet bore for delivering compressed fluid medium into said variable volume upper chamber and an outlet bore for removing said fluid medium from said upper chamber.

32. (New) A pressure regulator according to claim 31, wherein said second biasing means comprises compressed fluid medium in said upper chamber.

33. (New) A pressure regulator according to claim 30, wherein said first biasing means is a compression spring.

34. (New) A pressure regulator according to claim 31, including a safety valve in communication with said outlet channel.

35. (New) A pressure regulator according to claim 34, wherein said safety valve includes a valve element and a third biasing means to bias the valve element in a closing direction.

36. (New) A pressure regulator according to claim 35, including a supply line which connects the outlet bore of the upper housing part with the safety valve to help bias the valve element in a closing direction.

37. (New) An apparatus for continuously measuring dynamic fluid consumption comprising a tank, a continuously-operating flow sensor for fluid, and a fluid pressure regulator between the fluid flow sensor and a fluid consumer, said pressure regulator comprising a housing which includes an upper housing part and a lower housing part, said upper and lower housing parts defining an internal chamber therebetween, said

lower housing part furthermore defining an inlet channel, an outlet channel and a valve channel therebetween, a flexible diaphragm mounted inside said housing for dividing said internal chamber into a variable volume upper chamber and a variable volume lower chamber, said flexible diaphragm biasing a movable valve element to open said valve channel when said upper chamber assumes its maximum size and said lower chamber assumes its minimum size, where the deflection capability of the flexible diaphragm is greater than a deflection necessary for acting upon the valve element, such surpassing deflection defining a compensating volume inside the housing, first biasing means for biasing said valve element so as to close said valve channel when said flexible diaphragm is deflected into the upper housing part, and second biasing means for biasing said flexible diaphragm into a position where said variable volume upper chamber assumes its maximum size, said lower housing part providing a bore which communicates said variable volume lower chamber with said outlet channel.

38. (New) An apparatus according to claim 37, including a conditioning system for the fluid.

39. (New) An apparatus according to claim 37, including a pump for the fluid.

40. (New) An apparatus according to claim 37, wherein the flow sensor is a Coriolis sensor.